Checklists for Parts

By Bill O'Brien

When I worked for a living, I taped on the inside lid of my top box of my roll-away a "quotable quote" from Reader's Digest that said: "I have a very responsible job around here; every time there is a problem, I am responsible."

Things haven't changed a bit in the 15 years I've been with the FAA and forced to wear a tie. The technician is still responsible, especially for making sure the parts put on an aircraft are FAA approved (ref: FAR 21.303, FAR 43.13 and FAR 145.57).

It's bad enough for technicians to have to shoulder the responsibility for installing parts, but today it is even harder for the folks on the hangar floor. This is mainly because the confusion over what an approved part is has increased over the last three years by a factor of 10.

This tenfold increase in confustion is due in part to the hashing and rehashing of the suspected unapproved parts issue at hundreds of separate industry meetings, in media events, and maintenance seminars.

So the problem of determining what is an approved part or what is not, has for many technicians, become a question with a level of difficulty that is right up there with solving the riddle of the Sphinx.

To make matters a little worse, some technicians are under the impression that an "approved" part is automatically an "airworthy part."

Not so! An approved part and an airworthy part are not one and the same. To help you solve the suspected unapproved parts riddle, I have developed some definitions, along with checklists and a little advice, to help guide you through the maze. I can only hope this will clear up the confusion rather than add to it.

Approved Parts

An approved part is a part that meets one of the following standards:

1. Parts produced by the type certificate production approval holder (PAH), (e.g. the manufacturer of the aircraft or one of its components.)
2. Replacements parts with a parts manufacturer's approval (PMA).
3. Standard parts which are parts or materials manufactured in conformity with a specification that meets an established U.S. or foreign standard or a manufacturer's standard which is freely available without proprietary limitations. Items such as fasteners, O-rings, gaskets, etc., meet this criterion.
4. Parts manufactured under a technical standard order (TSO) such as radios, life rafts, ELTs, etc.
5. Owners/operators who produce parts manufactured for their own product as long as that part was built in accordance with design and performance data that meets the requirements of the FAR under which the type certificate was issued.
6. Parts produced by a foreign country with whom the United States has a bilateral agreement that allows for the acceptance of parts.

Unapproved Parts

Unapproved parts fit into one of two categories: counterfeit or undocumented parts.

Counterfeit parts: A counterfeit part is a clone of the original part. It may or may not function with the same high level of reliability and performance as the original.

In my opinion, the producers of counterfeit aviation parts are thieves. For money, they steal another man's sweat, and ideas. For money, they knowingly put innocent lives at risk. For money, they sell the integrity of our profession.

If you spot a counterfeit part or know of anyone making this kind of aviation junk, I want you to become part of the solution, not part of the problem. Please fill out a FAA form 8120-11 Suspected Unapproved Parts Notification, or notify the local Flight Standards District office or call the FAA Aviation Safety Hotline at (800) 255-1111 and give us information. No one who knows right from wrong will call you a snitch, and you might save a life or two.
Undocumented parts: The second, and largest category of unapproved parts is called undocumented parts. The vast majority of these parts pose no direct safety problem. The problem with these parts lies with the paperwork, or I should say the lack of paperwork. Used parts, military parts, salvage parts, and new or overhauled parts of unknown origin fit into this category. Without documentation, a technician can't determine if the part was manufactured under FAR Part 21, or if the part was previously determined to be airworthy by a certificated person. Also, in the case of a life-limited part, it's impossible to know the part's current status as far as accumulated cycles, hours, or maintenance history.

Incoming Inspection Checklist
Keeping an eye out for counterfiet parts shouldn't start with the person istalling them on the aircraft; instead, it should start when the part is received in the parts department. Oftentimes, the condition of the package or the part upon arrival can alert the parts department that there may be a problem. When a part is delivered, inspect the part and container for the following, and if any of the following items are found, reject the part:

1. There is obvious damage to the part or container in shipment.
2. The container/box has been previously opened and resealed by someone other than the part supplier.
3. The packaging, preservation of the part, or labeling of the part does not conform to the contractual requirements or the standard practices of the part supplier.
4. The part's data plate, serial number, or other identification means are missing or have been tampered with.
5. The part has surface defects or abnormalities such as an altered or unusual surface, absence of required plating or coating, evidence of prior usage, scratches, new paint, dirt, pitting, or evidence of corrosion.
6. Incomplete or no documentation.

Documentation Checklist
All incoming parts must have some kind of documentation. Here is what to look for:
1. Parts produced by a production certificate holder (PCH) PMA, or TSO — For part tracking you should have an invoice with the parts supplier's name, address, and telephone number. The invoice should also identify the part by PC, PMA, or TSO number, and should identify the part by, but not limited to, nomenclature, part number, serial number, identification stamp, or casting marks, symbols, or bar codes.
2. Owner-produced parts — the owner should provide you with documentation or a maintenance entry that says at least the following: The owner produced the part, the part meets the design and performance specifications of the original part, and what those design standards were. Also, the owner must state that the part is airworthy, and sign and date the document or maintenance entry.
3. Overhauled parts — should have an invoice and a maintenance entry that satisfies FAR 43.9. If the overhaul was a major repair, in addition to the invoice, appropriate documentation can be an FAA Form 8130-3 airworthiness approval tag, or an FAA certificated repair station maintenance release that meets Appendix B of Part 43, or a Form 337 Major Repair.

4. Life-limited parts — in addition to the invoice, the maintenance record requirements must include the cycles, time, hours or other reference(s) that the part's life limit is measured by.
5. Salvage parts — If you harvest a part off a bone-yard aircraft, first you must make sure that the donor aircraft was U.S. registered and maintained in accordance with a U.S. Standard Airworthiness Certificate. Parts taken from a foreign registered aircraft, even if it has a U.S. type certificate, are unapproved because the aircraft was not maintained under the FARs. Next, make out a maintenance record for installing the part on your aircraft in accordance with Part 43.9. Be sure that you include in your maintenance entry the N number and serial number of the donor aircraft, engine, or propeller from which you removed the part.
Remember, FAR 43.9 states that your signature and certificate number is a declaration the part and its installation is airworthy. When you make this statement, you are also telling the FAA you are trained to do the inspection and qualified to determine the airworthiness status of the part. Don't forget to identify the actual time on the part if it is a life-limited part, and note that you performed a form, fit, and function inspection prior to installing the part. You also have to perform an AD check and describe the current data you used to perform the 3 "F" inspection, (e.g. manufacturer's maintenance manual or service instructions). Record the results of any applicable operational check after you install the part. Repair stations and air carriers must inspect salvage parts in accordance with their inspection procedures manual or air carrier manual.
6. Military parts — With the exception of some restricted use, (exhibition, research and development and amateur-built category aircraft operating under a Special Airworthiness certificate) military surplus parts are not permitted to be used on FAA type certificated aircraft — even if they were once used on a public aircraft. The reason is that these parts may not have been manufactured under an FAA-approved quality assurance system.

Liars and Cheats ID Checklist
This checklist, in my opinion, lets you identify liars and cheats who think they are doing industry a favor by peddling unapproved parts. Here's what to look for:
1. Inventory reduction sale or liquidation sale peddled in trade magazines or flyers featuring prices 50 percent less than prices quoted by other suppliers of the same part. There is a good chance that these parts are unapproved.
2. A part's delivery that approaches Mach 3 when compared with the time it takes to deliver the same part supplied by other parts dealers. Be real suspicious, especially if the part is hard to get and everybody else has it back ordered. Ask the person peddling the part this question, "How come you have sources that no one else has?" If he/she only smiles, and talks about their "friends" in the parts business, then there is a good chance they are trying to sell you an unapproved part.
3. No supporting paperwork with the part showing FAA approval, or data showing conformity to the part. Usually the liar accounts for the nonexistent paperwork with a lame excuse like — "It blew out the window," or "my dog ate it." Or the all-time favorite lie — "I'll mail the paperwork to you next week after your check clears the bank."
4. Repair stations and parts distributors should also be careful of production approval holder vendors who overproduce a particular line of parts and offer the part overrun at substantially reduced prices. The parts will typically have the data plates and marking, etc., but no manufacturer's paperwork. These parts are often unapproved.
5. Be wary of PAH vendors who ship parts directly to you without direct ship authority from the PAH. Check the vendor's invoice for the PAH direct ship authority statement. If there is no such statement, those parts identified on the invoice are unapproved.
6. Be careful of out-of-state or little known repair stations advertizing themselves as "FAA Approved" and offering "overhauled" or "rebuilt" parts for sale at bargain basement prices. Before you deal with these folks, ask your local FAA office to check them out and see if they are properly

rated for the work they are advertising. In many cases, the FAA will never have heard of them, and you can bet your last torque wrench that the parts for sale are unapproved.

7. Be suspicious of airline surplus parts sales. In some cases the parts are approved, but in other cases the parts have little or no paperwork accompanying them. What is even scarier is that some of these parts may have been modified per the air carrier's engineering order, and the paperwork may not reflect the alteration, or there may be no paperwork at all. If this is the case, you'll end up with an unairworthy part.

8. A good rule of thumb for buying parts is never, ever, buy a part that has been in a fire, suffered sudden stoppage, taken a lightening strike, participated in a hard landing, or made an unplanned saltwater landing.

9. Carefully check out all parts that are double packaged. It's possible that someone will sell you a part or batch of parts that have exceeded their shelf life but are trying to hide it by repackaging the out-of-date parts in outer bags labeled with current shelf-life dates.

10. And finally, this last item is perhaps the best piece of advice I can give you. If the price is too good to be true, if the delivery time is too good to be true, if everything about the sale is too good to be true, then the whole deal is too good to be true and don't buy into it.

I'll close with two personal observations and a request.

I believe that 50 percent of the unapproved parts problem in the United States would disappear if fixed base operators, repair stations, air carriers, and individual technicians would take a personal interest in what parts arrive at their parts room door and make sure each part is approved.

Another 20 percent reduction in the unapproved parts problem could happen overnight if we could have the same operators get rid of their scrap parts in accordance with Advisory Circular (AC) 21-38 Dispostion of Scrap Parts. Help rid our industry of unapproved parts. Make the 70 percent reduction in unapproved parts happen today!